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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/636,124	08/10/2000	Damon F. Kvamme	KLA1P028A	6325

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EXAMINER

PHAM, HOA Q

ART UNIT PAPER NUMBER

2877

DATE MAILED: 08/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/636,124

Applicant(s)

KVAMME ET AL.

Examiner

Hoa Q. Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28,35-41,44,45 and 47-60 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 25-28,41,44,45,47 and 53-59 is/are allowed.
- 6) ☒ Claim(s) 1-4,6,7,9-18,20-24,35-40 and 48-52 is/are rejected.
- 7) ☒ Claim(s) 5,8,19 and 60 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 October 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 21, line 2 has no antecedent basis for "the substrate".

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 6-18, 20-22, 24, 35-40, and 48-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al (5,576,825) (of record) in view of Sanada et al (6,084,716).

Regarding claims 1-4, 6, 7, 22, 24, Nakajima et al (of record) discloses a light source (1) for emitting a light beam along an optical axis, a first set of optical elements (2,3) for separating the light beam into a plurality of beams and focusing a plurality of light beam to a plurality of scanning spots on the surface of the substrate (7); a second set of optical elements (5) for collecting a plurality of transmitted light beams caused by intersection of the plurality of beams with the surface of the substrate (7) and by passing the plurality of light beams through the substrate; and a light detector arrangement (4)

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including individual light detectors (pixels) that each receive individual ones of plurality of transmitted light beams, the light detectors being arranged for sensing the light intensity of the transmitted light beams (see figure 7 and column 8, lines 1-36).

Nakajima et al teaches that the device is also used for inspecting printed pattern on various other kinds of sheet materials (column 9, lines 1-7) and does not explicitly teach that the substrate is a mask, reticle or semiconductor wafer; however, such a feature is known in the art as taught by Sanada et al. Sanada et al, from the same field of endeavor, teaches that the optical inspection system is used for inspecting mask, reticle, or wafers (column 1, lines 5-9). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the basis device of Nakajima et al for inspecting the substrate such as mask, reticle, or wafer as taught by Sanada et al.

Regarding claims 9-11, see figure 15 of Sanada et al for scanning mirrors (105, 106)

Regarding claim 12, see elements (5, 8) in figure 6 of Nakajima et al.

Regarding claims 13-18, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the beam separator of Nakajima et al or Sanada et al by a diffraction grating or a beam splitter cube for the same purpose of separating the light beam into a plurality of light beams because they are equivalent in function. A substitution one for another is generally recognized as being within the level of ordinary skill in the art.

Regarding claim 20, see objective lens (308) in figure 12 of Sanada et al.

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Regarding claims 21, 48-51, see column 23 lines 15 –22 of Sanada et al for X-stage 1002 and Y-stage 1004.

Regarding claims 22, 35-40, see column 8, lines 37-45 of Nakajima et al or column 3, line 5-7 of Sanada et al for comparison between the reference signal and scan signal.

Regarding claim 52, it would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the scanning spots of Nakajima and Sanada et al by having a specified overlap and separation with respect to one another to ensure that the entire surface is scanned.

4. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Karaki et al (5,130,965).

Karaki et al (of record) discloses a light source (1) for emitting a light beam along an optical axis (B), a diffraction grating (4) disposed along the optical axis, the diffraction grating being arranged for separating the light beam into a plurality of light beam (B1, B2, B3) which are used to form scanning spots on the surface of a substrate (8), the grating spacing and rotation is controlled by controller (20, 13A). Karaki et al does not explicitly teach that each scanning spots having a specified overlap and the substrate is a mask, reticle, or wafer. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to control the space of the grating or the rotating angle of the grating so that the scanning spots having a specified overlap to ensure that entire surface is scanned. It also obvious to one having ordinary skill in the

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art at the time the invention was made to use the basic device of Karaki et al for inspecting the defects of a mask, reticle or wafer because the device would function in the same manner.

***Allowable Subject Matter***

5. Claims 25-28, 41, 44, 45, 47, and 53-59 are allowed.

The following is an examiner's statement of reasons for allowance:

There was no prior art found by the examiner that suggested modification or combination with the cited art so as to satisfy the combination of all the limitations in claims 25, 41, and 47.

As to claims 25, the prior art of record, taken alone or in combination, fails to disclose or render limitations "**a transmitted light prism...single transmitted light beam**" and "**a reflected light prism ...a single reflected light beam**", in combination with the rest of the limitations of claim 25.

As to claim 41, the prior art of record, take alone or in combination, fails to disclose or render limitations "**a telescope for varying the size of scanning spots on the substrate**" and "**a prism for directing individual one of the plurality of reflected or transmitted beams to individual light detectors**", in combination with the rest of the limitations of claim 41.

As to claim 47, the prior art of record, take alone or in combination, fails to disclose or render limitations "**a variable magnification subsystem disposed along**

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**the optical axis for controlling the scanning spot size"**, in combination with the rest of the limitations of claim 47.

6. Claims 5, 8, 19, and 60 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

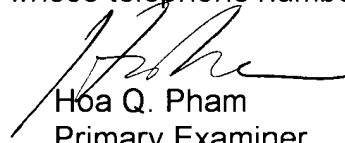
***Response to Arguments***

7. Applicant's arguments with respect to claims 1-28, 35-41, 44-45, 47-60 have been considered but are moot in view of the new ground(s) of rejection.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoa Q. Pham whose telephone number is (703) 308-4808. The examiner can normally be reached on 6:30 AM to 5 PM Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (703) 308-4881. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
Hoa Q. Pham  
Primary Examiner  
Art Unit 2877

Pham/hp  
August 1, 2003